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# Bristol Bay Final Report 2013

## Frequently Asked Questions

DRAFT—FOR INTERNAL USE ONLY

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### HISTORY AND AUTHORITY

**Q: Why did EPA conduct this assessment? Why now, before it has received a mine proposal?**

**A:** EPA initiated this assessment in response to petitions from nine federally recognized tribes and other stakeholders who asked us to take action to protect Bristol Bay's salmon populations. They expressed concern that the Bristol Bay salmon fishery would be at risk from the potential Pebble Mine.

We also heard from other tribes and stakeholders who support development in the Bristol Bay watershed and have requested EPA take no action and allow a typical permitting process to proceed.

EPA performed this assessment to better understand the watershed and its resources. The final assessment will be valuable to the public and for federal, state, and tribal governments as they consider how best to address the challenges of mining and ecological protection in the watershed.

**Q: What is the scope of the Bristol Bay Assessment?**

**A:** This scientific assessment focused on the Nushagak and Kvichak watersheds in Bristol Bay, which are open for large-scale resource development. We examined the current environmental conditions and possible short-term and long-term impacts of large-scale mining.

EPA reviewed existing scientific studies and data. The agency focused specifically on potential impacts to salmon. EPA also examined potential impacts to resident fish, and wildlife such as bear, eagles and caribou. The assessment also looked at potential effects on indigenous subsistence cultures that are dependent on the salmon for their way of life.

**Q: What is outside of the scope of the Bristol Bay Assessment?**

**A:** We did not look at the impacts from a port facility, power generation, working housing, domestic waste, and other ancillary facilities. We did not look at direct effects of mining to people or wildlife – we only looked how they would be affected from losses of fish. We didn't look at air pollution or, and other potential releases from mining which are not as closely related to the Clean Water Act. The assessment is not a cost-benefit analysis of mining and/or fishing. We would expect that a full analysis of mining impacts would be part of a NEPA process.

**Q: Has EPA ever done an assessment like this before?**

**A:** Conducting scientific assessments is part of EPA's mission and day-to-day work. EPA has conducted assessments that examine environmental impacts of past actions or potential impacts of future actions, including studies that:

- Predict the future introduction of non-indigenous species to the Great Lakes
- Assess the effects of mountaintop mines and valley fills on aquatic ecosystems in the Central Appalachian Coalfields
- Explore the environmental impacts of human activities in the Waquoit Bay watershed in Massachusetts.

**Q: What authority is EPA using for its watershed assessment?**

**A:** EPA conducted this assessment under its Clean Water Act authorities, including Sections 104(a) and (b), which, among other things, direct the agency to:

*...conduct and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution.*

**Q: What is Clean Water Act Section 404(c)?**

**A:** Clean Water Act Section 404(c) authorizes EPA to prohibit the specification of any defined area as a disposal site, or to deny or restrict the use of any defined area for specification as a disposal site for dredged or fill material if the discharge will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas.

**Q: How much did EPA spend on this report?**

**A:**

**Q: How was the State of Alaska involved in the assessment?**

**A:** EPA reached out to the State from the beginning of the process. We requested data and information from State agencies and consulted with their technical experts. We appreciate the assistance we received from State agencies and rely heavily on data collected by the State, especially on fisheries and subsistence in the watersheds.

**Q: What about other Federal agencies?**

**A:** EPA is grateful for the assistance of the U.S. Fish and Wildlife Service, the NOAA, and the U.S. Geological Service. They each prepared appendices for the assessment and provided invaluable advice. Other federal agencies provided input on the scope of the assessment as part of an Intergovernmental Technical Team convened early in the process.

## **SCIENCE AND PEER REVIEW**

**Q: What does the assessment say about Bristol Bay?**

**A:** Key statistics on Bristol Bay's productivity and economics:

- Bristol Bay supports the largest sockeye salmon run in the world, producing approximately 46 percent of the world's wild sockeye.
- The annual average run of sockeye in Bristol Bay was approximately 37.5 million fish between 1990 and 2010. In 2009, Bristol Bay's wild salmon ecosystem generated \$480 million in direct annual economic expenditures in the region and sales per year and provided employment for over 14,000 full and part-time workers.
- All five species of Pacific salmon spawn and rear in the Bristol Bay watershed: sockeye, Chinook, chum and pink. In addition, the Nushagak River supports one of the world's largest Chinook salmon runs.
- Bristol Bay watershed provides habitat for 35 fish species, more than 190 bird species, and more than 40 terrestrial animals.
- -Bristol Bay supports large carnivores such as brown bears, bald eagles, and wolves that depend on salmon; ungulates such as moose and caribou; and numerous waterfowl species.

**Q: What kind of information did EPA collect and analyze for the assessment?**

**A:** EPA reviewed existing science on:

- Bristol Bay salmon and other fish
- Bristol Bay wildlife
- Bristol Bay marine resources
- Salmon fishery economics
- Geology, hydrology, seismology and other environmental sciences
- Wetlands ecology and stream ecology
- Mining engineering, construction and operation

- Subsistence use data
- Cultural importance of salmon
- Mining industry practices that minimize mining impacts
- Traditional ecological knowledge from tribal elders

**Q: How did the initial draft assessment change in response to the peer review and public comments?**

**A:** We revised the May 2012 draft assessment in response to the August 2012 peer review, as well as the public comments we had received to that point. In doing so, we:

- Reorganized the report to better reflect the ecological risk assessment approach and to clarify the purpose and scope of the assessment;
- Refined the mine scenarios and explained how they are based on worldwide industry standards for porphyry copper mining and specific preliminary mine plans submitted to state and federal agencies related to the Pebble Mine project;
- Incorporated modern conventional mining practices into mine scenarios and clarified that projected impacts assume those practices are in place and working properly;
- Revised the tailing dam failure scenarios to address the peer reviewers' suggestions;
- Considered potential releases of cyanide and molybdenum as part of the risk assessment scenarios;
- Added a spillway release scenario to the water collection, treatment, and discharge analyses;
- Incorporated updated digital elevation model data;
- Expanded appendix on potential compensatory mitigation approaches, including proposed ecological engineering to improve fish production; and
- Deleted minor supporting references that were questioned during public comment period.

**Q: What did the peer reviewers say about the revised assessment?**

**A:** The peer reviewers indicated they were satisfied with the 2013 revised assessment and the work EPA did in responding to their original comments. The peer reviewers made suggestions to improve the clarity of the assessment. Additionally, they suggested EPA add an assessment of the potential use of cyanide as part of mine operations. They also suggested EPA make some revisions to the tailings storage facilities dam failure scenario.

**Q: What changes were made to the final assessment in response to comments from peer reviewers and public on the revised draft?**

**A:** There were no revisions which changed the basic conclusions of the assessment. The following revisions improved the completeness and accuracy of the assessment:

- Considered risks from cyanide and molybdenum releases.
- Revised tailings dam failure scenarios. This resulted in slightly less severe downstream impacts.
- Considered risks from spillway releases from tailings storage facilities.
- Expanded discussion on potential compensatory mitigation measures (Appendix J).
- Incorporated updated digital elevation model data – this changed the areas of impacted streams and wetlands slightly;
- Deleted minor supporting references that were questioned during the public comment period.

**Q: Did EPA use data from the Pebble Limited Partnership?**

**A:** Yes – The assessment uses data from the Pebble Limited Partnership and cites the Environmental Baseline Document approximately 70 times. We also relied on the State's Anadromous Water Catalog which includes fish data collected by PLP.

**Q: Did EPA consider climate change impacts on the fishery? What if the fishery is no longer sustainable due to climate change? Would the EPA's assessment of risks make the mine more acceptable then?**

**A:**

**Q: How were the peer review panelists selected?**

**A:** Consistent with guidelines for the peer review of highly influential scientific assessments, EPA asked an independent contractor (Versar, Inc.) to assemble a group of experts to evaluate the draft Bristol Bay assessment. Versar evaluated 68 candidates nominated during a public comment period and sought other experts to complete the peer review panel. Twelve scientists, with expertise in mine engineering, salmon fisheries biology, aquatic ecology, aquatic toxicology, hydrology, wildlife ecology, and Alaska Native cultures, reviewed the assessment for its scientific quality. These reviewers were selected based on a variety of factors, including: demonstrated expertise through relevant peer reviewed publications, absence of conflicts of interest, and willingness to commit adequate time for a thorough review of the draft assessment. During their review of the draft assessment, they specifically addressed 14 charge questions develop by EPA with input from the public.

**Q: What areas of expertise are relevant to the peer review and were sought for members of the peer review panel?**

**A:** Potential nominees in one or more of the following areas were solicited: (1) metals (particularly porphyry copper) mining, (2) salmon fisheries biology, (3) surface, subsurface, or watershed hydrology, (4) aquatic ecology, (5) biogeochemistry, (6) seismology, (7) ecotoxicology, (8) wildlife ecology, and/or (9) indigenous Alaskan cultures.

**Q: How did EPA ensure the independence of the panel and how do you avoid bias in charge questions which have the potential to sway opinions by the reviewers?**

**A:** The peer reviewers for the draft Bristol Bay assessment were selected by an independent contractor (Versar, Inc.). As a standard procedure, the contractor screened reviewers for actual or potential conflicts of interest, or any appearance of bias or lack of impartiality. The reviewers were found free of conflicts of interest. EPA also thoroughly vets potential conflicts of interest of peer reviewers in advance of peer review groups being finalized.

**Q: Who were the peer review panel members?**

**A:** The twelve peer review panel members and their areas of expertise are:

1. Mr. David Atkins, Watershed Environmental, LLC. (Expertise in mining and hydrology)
2. Mr. Steve Buckley, WHPacific/NANA Alaska (Expertise in mining and seismology)
3. Dr. Courtney Carothers (Expertise in indigenous Alaskan cultures)
4. Dr. Dennis Dauble, Washington State University (Expertise in fisheries biology and wildlife ecology)
5. Dr. Gordon Reeves, USDA Pacific NW Research Station (Expertise in fisheries biology and aquatic biology)
6. Dr. Charles Slaughter, University of Idaho (Expertise in hydrology)
7. Dr. John Stednick, Colorado State University (Expertise in hydrology and biogeochemistry)
8. Dr. Roy Stein, Ohio State University (Expertise in fisheries and aquatic biology)
9. Dr. William Stubblefield, Oregon State University (Expertise in aquatic biology and ecotoxicology)
10. Dr. Dirk van Zyl, University of British Columbia (Expertise in mining and biogeochemistry)
11. Dr. Phyllis Weber Scannel (Expertise in aquatic ecology and ecotoxicology)
12. Dr. Paul Whitney (Expertise in wildlife ecology and ecotoxicology)

**Q: Why did EPA conduct a peer review of this assessment?**

**A:** Peer review is the evaluation of a product by experts in that field who were not involved in that product's development. It is a tool EPA uses to ensure that only high quality, sound science is released and used by the Agency.

**Q: When will response to peer review comments be released?**

**A:** We will release our response to the peer reviewers' comments when we release the final Bristol Bay Watershed Assessment.

**Q: Did EPA follow its new practices for contractor-organized peer review for the Bristol Bay Watershed Assessment?**

**A:** EPA issued its new practices for contractor-organized peer review in March 2013. We released the initial draft Bristol Bay Watershed Assessment in May 2012. While this was nearly a year prior to the issuance of the new peer review practices, we took steps to ensure that the external peer review was of the highest caliber and included public input and comment. For example, even though it was not standard at that time, in February 2012, we issued a call for nominations for experts to serve on the peer review panel. We also accepted public comment on the draft peer review charge questions. Finally, after receiving comments from the peer review panel, we revised the assessment and arranged for the 12 expert peer reviewers to evaluate the changes that were made to the draft assessment. We followed up with the

peer reviewers to make sure we addressed the comments they provided during the peer review with the objective of using the best available science in the assessment.

## **MINING**

**Q: How could mining affect the Bristol Bay salmon fishery?**

**A:** Some of our key findings regarding salmon and mining include:

- Large-scale mining operations would cover or fill in large amounts of salmon habitat including many miles of streams and thousands of acres of wetlands. It would be very challenging, if not impossible, to replace this habitat in an already highly functioning watershed.
- If water seeped through mine waste piles and breached or overtopped tailings dams, highly acidic water would be released into streams and likely would kill fish and destroy habitat.
- Accidents and failures are likely during the operation of the mine and after its closure. Failures could include contaminated leakage to surface and ground water; road culvert failure, pipeline failures and tailings dam failures.
- Polluted runoff and sediment from roads as well as washouts and culvert failures could damage or destroy fish habitat and block fish passage.
- The water taken from streams for mining operations could change the complex hydrology in areas critical for the salmon lifecycle.
- These impacts would be compounded if multiple mines are developed in the area. There are 17 existing mining claims in the watershed.
- Mine waste and water in contact with mine waste would need to be managed in perpetuity, long after mining has stopped.
- Pipeline failures are very likely and would release product concentrate or diesel fuel into streams or wetlands.

**Q: How did EPA develop its mining scenarios?**

**A:** EPA developed a series of realistic mining scenarios based on a mine plan published by Northern Dynasty Minerals, as well as other mining industry references and consultation with mining experts. The mine scenarios depict modern permitted mines operating in compliance. Eventual mine plans may differ, but would still have the basic elements – a mine pit and large quantities of waste rock and tailings that would have to be managed and stored in perpetuity.

- Mine footprint would eliminate or block 24 to 94 miles of streams and 2 – 7.6 square miles of wetlands, reduce stream flow for an additional 9 – 33 miles downstream, and degrade water quality, causing toxic effects on fish and invertebrates.
- Compensatory mitigation for losses would be challenging, if not impossible.
- Failures of leachate collection and treatment would be likely over time and would introduce contaminants toxic to fish and invertebrates downstream.
- A tailings dam failure would be less likely but result in significant habitat destruction and reduction of salmon population.
- Transportation corridor would cross approximately 64 streams, many supporting anadromous fish, and multiple wetlands.
- Risks to salmon from blocked culverts ~~are~~is very likely, especially after mine closure.
- Chemical spills from truck accidents could be very likely during mine operation.

**Q: Pebble Limited Partnership says it's most likely they'll apply for a 20 year permit, but EPA modeled a larger mine with more significant impacts. Compared to a 20 year mine, it seems EPA's assessment greatly overstates the environmental impact. Is this assessment relevant to a 20 year mine plan?**

**A:**

**Q: Did EPA consider a "block-caving" mine plan? If so are any of the risks you outlined for a traditional open pit mine applicable to the block-cave approach?**

**A:**

**Q: Bristol Bay is a vast area. How can a spill, even a large one, impact robust fish stocks in such a wide expanse?**

A:

## **PUBLIC PARTICIPATION**

### **Q: How did the EPA involve the Public?**

A: In the beginning of the assessment process, we asked the public to send us information on the Bristol Bay environmental resources. Throughout the process, EPA met with numerous groups and heard their concerns and ideas. We produced two drafts of the assessment and requested public comment on both drafts. We asked the public for input on peer reviewers and peer review questions.

### **Q: How many comments did EPA receive (over the course of the whole assessment—let's divide up first draft, peer review, second draft)?**

A: EPA received approximately 233,000 comments on the first draft and approximately 895,000 comments on the second draft. We heard spoken comments at eight public meetings during the first comment period, attended by approximately 2,000 people. We reviewed and considered ALL comments received during the public comment periods.

### **Q: How many meetings did EPA hold?**

A: EPA staff have participated in dozens of meetings with Alaska Native tribes, businesses, stakeholders and communities over the past two years.

### **Q: When will response to public comments be released?**

A: We plan to release our response to the public comments in the weeks following the release of the final Bristol Bay Watershed Assessment.

## **WHAT'S NEXT**

### **Q: Is EPA invoking Clean Water Act section 404(c) with regard to the potential Pebble Mine?**

A: The agency is not invoking Clean Water Act section 404(c) at this time. The watershed assessment is not a regulatory action. The EPA regulations establish a clear process for the EPA to follow in taking an action under Section 404(c). This is not a part of that regulatory process.

### **Q: Will this assessment affect mining prospects in Bristol Bay and other parts of Alaska? Are you setting a precedent?**

A: Each mining prospect has a unique set of circumstances that dictates the nature of the environmental review. Decisions about any particular mining prospect would be a result of the specific facts around that mining prospect and natural resources at risk, not as a result of this watershed assessment. In this case, it is clear that Bristol Bay is an exceptional area with global environmental importance. EPA does not know of any mine of this scale that is at the headwaters of such an important resource.

### **Q: What role does EPA play in the mining permitting process?**

A: EPA may be involved in a mining permitting process due to the Agency's authorities under the National Environmental Policy Act and Clean Water Act. Under NEPA, EPA reviews and comments on Environmental Impact Statements for proposed mines.

EPA also reviews and comments on proposed U.S. Army Corps of Engineers' permits for the discharge of fill material, which would be necessary for building roads, dams or other mining related activities that involve the discharge of dredged or fill material into waters of the U.S. Under the Clean Water Act Section 404, EPA reviews the proposed permit's public notice, can elevate concerns to the Corps, and can put restrictions on projects under Clean Water Act Section 404(c).

Under Clean Water Act Section 402, EPA provides oversight of the state's wastewater discharge (Alaska Pollutant Discharge Elimination System) permits and can object to permits that do not meet requirements.

EPA may also have a role in reviewing air permits and writing underground injection control permits.

**Q: Would a Clean Water Act 404(c) decision affect all future development proposals (e.g., an airstrip, fish-processing plant, refinery, hospital, school, museum) that may require a dredge or fill disposal site?**

**A:** The watershed assessment is not a regulatory action under Section 404(c). The EPA's assessment is a scientific assessment focused on large-scale mining in the Bristol Bay watersheds. If the EPA were to take a future action under Section 404(c), it is unlikely that local community development proposals would be affected as those projects are of a different scope and scale than a large-scale mine and do not involve waste materials that pose the same potential risks as some mining wastes. Any development that involves dredging or filling wetlands or streams already requires a permit and decisions on those permits are made on a case-by-case basis.

**Q: Does the EPA believe the State of Alaska and the Army Corps of Engineers could not do this assessment themselves? Is this assessment an attempt to pre-empt the state's science or that of the Army Corps?**

**A:**

## **RESPONDING TO CRITICISM**

**Q: Why didn't EPA consider the economic opportunities and jobs a mine would bring? You looked at fisheries jobs. Why not mining?**

**A:**

**Q: Critics have said EPA's mining scenario doesn't represent what a real mine would look like. How do you respond?**

**A:**

**Q: Wouldn't compensatory mitigation allow a mine to be built while preserving Bristol Bay ecology?**

**A:** Given the pristine nature of the watershed, it would be extremely challenging, if not impossible, to "improve" an already highly functional watershed to compensate for streams and wetlands lost through large-scale mining.

**Q: Would EPA be overriding the Army Corps and State's permitting authorities with a CWA 404 c action?**

**Q: Why didn't you make the change I suggested?**

**A:** All comments were considered and you can find a response in the RTC document. Sometimes we had to choose between conflicting input or did not make changes on topics that were outside the scope of the assessment.

**Q: Conflict of interest of EPA contractors**

**A:** There are a limited number of scientists that have extensive knowledge and research authorship about Bristol Bay. We cautioned all contractors and even EPA staff to be fair and impartial with information in order to produce a credible risk assessment.

**Q: How did EPA deal with the Stratus resources conflict of interest situation?**

**A:** Ann Maest and Stratus Resources were not the authors of the assessment. Of over XXXX citations used during the preparation of the assessment there were only X from the source in question (need to look up the numbers).

**Q: Doesn't the state object to the assessment?**

**A:** The State Attorney General and the Governor have both been opposed to EPA conducting an assessment. They have asked that EPA wait for a specific permit application to take any action.